National Institute of Environmental Health Sciences

The responses of agriculture in Europe to climate change

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Abstract:

Human activities are projected to lead to substantial increases in temperature that will impact northern Europe during winter and southern Europe during summer. Moreover, it is expected that these changes will cause increasing water shortages along the Mediterranean and in the south-west Balkans and in the south of European Russia. The consequences on the European agricultural ecosystems are likely to vary widely depending on the cropping system being investigated (i.e. cereals vs. forage crops vs. perennial horticulture), the region and the likely climate changes. In northern Europe, increases in yield and expansion of climatically suitable areas are expected to dominate, whereas disadvantages from increases in water shortage and extreme weather events (heat, drought, storms) will dominate in southern Europe. These effects may reinforce the current trends of intensification of agriculture in northern and western Europe and extensification and abandonment in the Mediterranean and south-eastern parts of Europe. Among the adaptation options (i.e. autonomous or planned adaptation strategies) that may be explored to minimize the negative impacts of climate changes and to take advantage of positive impacts, changes in crop species, cultivar, sowing date, fertilization, irrigation, drainage, land allocation and farming system seem to be the most appropriate. In adopting these options, however, it is necessary to consider the multifunctional role of agriculture and to strike a variable balance between economic, environmental and economic functions in different European regions.

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Resource Description

Climate Scenario :

specification of climate scenario (set of assumptions about future states related to climate)

Special Report on Emissions Scenarios (SRES), Other Climate Scenario

Special Report on Emissions Scenarios (SRES) Scenario: SRES A1, SRES A2, SRES B1, SRES B2

Other Climate Scenario: A1B;A1FI

Exposure :

weather or climate related pathway by which climate change affects health

Extreme Weather Event, Food/Water Security, Food/Water Security, Temperature

Extreme Weather Event: Drought

Food/Water Security: Agricultural Productivity, Livestock Productivity

Temperature: Extreme Heat, Fluctuations

Geographic Feature:

resource focuses on specific type of geography

None or Unspecified

Geographic Location:

resource focuses on specific location

Non-United States

Non-United States: Europe

Health Co-Benefit/Co–Harm (Adaption/Mitigation):

specification of beneficial or harmful impacts to health resulting from efforts to reduce or cope with greenhouse gases

A focus of content

Health Impact:

specification of health effect or disease related to climate change exposure

Health Outcome Unspecified

Intervention:

strategy to prepare for or reduce the impact of climate change on health

A focus of content

Mitigation/Adaptation:

mitigation or adaptation strategy is a focus of resource

Adaptation, Mitigation

Model/Methodology:

type of model used or methodology development is a focus of resource

Exposure Change Prediction

Resource Type:

format or standard characteristic of resource

Review

Resilience:

capacity of an individual, community, or institution to dynamically and effectively respond or adapt to shifting climate impact circumstances while continuing to function

A focus of content

Timescale: ☒

time period studied

Long-Term (>50 years)

Vulnerability/Impact Assessment: ☒

resource focus on process of identifying, quantifying, and prioritizing vulnerabilities in a system

A focus of content